ORIGINAL ARTICLE

Effectiveness of Brief Pre-discharge Smoking Cessation Counselling in Medical and Surgical Ward Hospital Universiti Sains Malaysia

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ABSTRACT

Introduction: Cigarettes smoking is leading preventable cause of death worldwide and the main cause of hospitalization due to related illness. Hospitalisation provides a good environment for smoking cessation. The purpose of this study is to determine the effectiveness of brief pre-discharge smoking cessation counselling for hospitalised patient at HUSM. **Materials and methods:** Cross sectional study was done on 94 patients admitted to medical and surgical ward HUSM. Sociodemographic data was obtained and nicotine dependence for each patient was calculated using Malay version of Fagerstrom score form. Data was analyzed using simple and multiple linear regression for nicotine dependence factors association whereas simple and multiple logistic confirmatory tests was done to determine the association between nicotine dependence and smoking related illness. Intervention group (n = 46) received brief intervention and pamphlet regarding to stop smoking whereas control group (n = 48) just receive usual care. All patients were given one month follow up using Proscha's transtheoretical model of change. **Results:** Response rate of the study was 98%. Sociodemographic data (age, job, income and duration of hospital stay) are not significant associated factor for nicotine dependence. There are no significant association between nicotine dependence and smoking related illness. 65% patient from intervention group had change their motivation towards smoking cessation. Result from Chi square analysis was not significant (P=0.065). **Conclusion:** More variables are needed to the study associated factors of nicotine dependence. Brief counselling module may motivate precontemplation hospitalised smokers to stop smoking. However different approach is needed to get a better result.
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Keywords: Counselling, Smoking cessation, Smokers, Nicotine, Intervention module

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INTRODUCTION

Worldwide, the primary preventable cause of death is smoking cigarettes, while the use of tobacco leads to over five million deaths annually. This number will have risen to over eight million deaths around the world by 2030. Should present smoking trends continue, low- and middle-income countries will experience 80% of these deaths (1). Various studies have demonstrated the effectiveness of delivering smoking intervention during a period of hospitalisation. Those admitted to hospital with cardiovascular disease have responded effectively to intensive counselling and behavioural support (2), but delivering these as routine services to all patients who smoke is time-consuming and logistically complicated. Since every ward doctor and nurse can deliver briefer or less intensive counselling, this may be better suited to be generally applied on the ward. Research has demonstrated the significantly greater success of staff nurses giving counselling on quitting smoking to patients in hospital with cardiac diseases (3).

Doctors and healthcare practitioners have a unique chance to conduct interventions with a smoker through hospitalisation (4). When patients experience periods

of illness, their vulnerability to accept guidance and information about the dangers of habitual smoking increases (5-6). Nevertheless, the data currently available suggests that during hospitalisation, the majority of smokers receive no advice about quitting smoking (7). Malaysia's 2017 clinical practical guidelines (CPG) on treating dependence on tobacco advised that every hospitalised smoker should receive counselling and treatment (8). However, neither Hospital Universiti Sains Malaysia (HUSM) nor Malaysian hospitals in general fully practise intervention related to smoking cessation among hospitalised patients (9).

The current study assessed brief smoking cessation counselling delivered to patients at Hospital Universiti Sains Malaysia (HUSM) to determine their post-counselling motivation. Ideally, their illness and the assistance offered in the hospital environment would benefit and motivate patients who found to hard to stop smoking so they would be able to do so in the future.

MATERIALS AND METHODS

The researchers approached and recruited a total of 96 adults who smoked and had been admitted to the medical and surgical ward at HUSM such as male medical ward (7 Selatan), female medical ward (7 Utara), male surgical ward (2 Intan), female surgical ward (3 Utara) and surgery ward combination (1 Selatan). However, two patients from the control group were excluded from the analysis because they did not appear during the follow-up. This resulted in a 98% response rate. This research consisted of pre- and post-intervention. The pre-study involved a cross-sectional study, while the post-study was an intervention study with randomised control trials. Both were conducted in the medical and surgical ward at HUSM among the same patients, with specific inclusion and exclusion criteria but a different design and methodology. To meet the inclusion criteria, the subjects had to be adults aged at least 18, current smokers (a minimum of one cigarette per day before admission) and in the pre-contemplation phase of the transtheoretical model of change developed by Prochaska (10). The first stage of Transtheoretical Model (TTM) by Prochaska, pre-contemplation, exposes unmotivated persons who, since they typically do not think that a solution exists, feel no need to locate one. In other words, the person in pre-contemplation stage not at all thinking about quitting from smoking. Conversely, the exclusion criteria involved any psychiatric illnesses, concomitant alcoholics and users of drugs, as well as patients who were unstable, were using inotropes or could not talk.

Generally, when creating treatments to modify people's behavior, behavior change models like the Health Belief Model (HBM) and cognitive theories like the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and Transtheoretical Model (TTM) are commonly employed. But the Transtheoretical Model (TTM) sets itself apart from other models of behavior change by acknowledging that behavior change is an ongoing process. To help them go through the stages of transformation, people going through this process need different interventions at different times. The stages of change are also identified by TTM, along with the different procedures that allow an individual to progress through them but in other models suggest that all individuals targeted are categorized together, and interventions are applied collectively. The TTM is aware that maintaining a behavior and changing it are two separate things. Only TTM takes into account the maintenance of this behavior change, even though other behavior change models might be effective in temporarily altering an individual's behavior. When it comes to controlling addictive habits like tobacco use, maintenance of behavior modification is crucial. Consequently, the TTM has emerged as the preferred behavior modification model among social marketers when addressing tobacco smoking (11-12).

The sampling size was determined for both the pre- and post-study. The pre-study focused on finding factors linked to a dependence on nicotine, while the post-study aimed to ascertain how effective the short counselling module was among the intervention and control groups, in comparison to the standard care given on being ready to stop smoking. Both the pre- and post-study were determined using Power and Samples software to compare two means. For this study, three objectives have been considered for sample sizes calculation which are to calculate the sample size for associated factors for nicotine dependence using Simple and Multiple linear regression analysis (objective 1) and to compare two means by Power and Sample software to confirm the association between nicotine dependence and cause of hospitalization (objective 2) using cross sectional study design. Meanwhile, randomize control trial design was done for objective 3 for intervention and control groups. A 20% non-response rate was incorporated, so the largest sample size utilised was 42 subjects for each group to address the second objective, compared to 28 for the initial objective. Meanwhile, 49 patients per group were used to address the third objective.

As part of the pre-study, the patients' sociodemographic data was obtained using their medical records, the stages of the form on assessing change and the Malay edition of the Fagerstrom score. These were used as guidelines on stopping smoking guidelines and an assessment of dependence on nicotine, respectively (13). As with the post-study, SPSS version 22 was used to perform multiple linear regression analysis. Meanwhile, the post-study used the same patients, who were assigned to either a control group, who would only be given the usual care and simple advice on stopping smoking, or an intervention group, who would be given brief counselling regarding smoking cessation using a flip

chart and a guiding pamphlet as a guide. During follow-up after one month, both groups were assessed on their readiness to change using the same stage of the change assessment form used in the pre-study. Pearson's Chi-squared test was undertaken to assess the effectiveness of the brief counselling in terms of readiness to stop smoking.

The brief counselling was delivered using a flip chart as a guide, and a pamphlet was given to the patients as a future guide. The flip chart was created by the researcher and had been face-validated by four family medicine specialists. The chart was created to be as short and concise as possible so it could be given as a short counselling session lasting about 10 minutes. The counselling content covered the chemical contents of cigarettes; smoking cigarettes and addiction to nicotine; which diseases arose from smoking cigarettes; the benefits of stopping smoking; and places that would help smokers to quit. Overall, the sampling, data collection and result analysis was summarized in Figure 1.

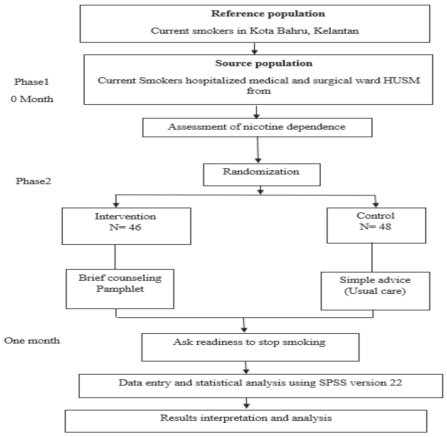

Figure 1: Flow chart of the study

The patients' information was kept anonymous and confidential. To prevent any bias in the study, no patients were receiving principal investigator care during hospitalisation or the follow-up session. The Human Research and Ethical Committee, Universiti Sains Malaysia granted ethical approval (JEPeM CODE: USM/JEPeM/ 15060228).

RESULTS

Simple and multiple linear regression analysis to determine associated factors for nicotine dependence

No significant associated factors for readiness to stop smoking were identified by simple linear regression, as shown in Table I and Figure 2. Multiple linear regression analysis included variables with p-values <0.25 (days in hospital days and diagnosis). However, this analysis showed no significant variables.

Table I: Associated factors for nicotine dependence by Simple linear regression (n=94)

Variables	*b*[a] (95% CI)	t-stat	P-value	r^2
Age	0.002(-0.02,0.03)	0.18	0.858	0.00
Hospital days	-0.11(-0.24,0.03)	-1.58	0.118	0.02
Job	0.07(-0.81,0.95)	0.15	0.882	0.00
Income	0.11(-0.69,0.92)	0.28	0.779	0.01
Diagnosis	0.57(-0.15,1.30)	1.58	0.118	0.03

[a] = Crude regression coefficient.

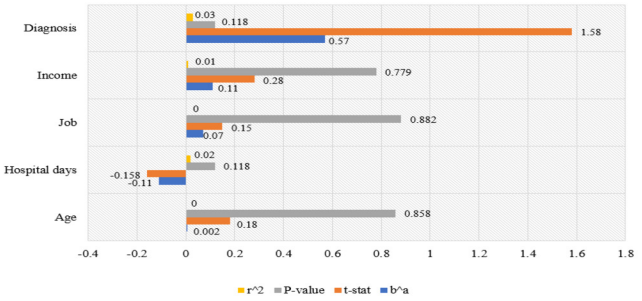

Figure 2: Bar Chart of Associated factors for nocotine dependence by Simple Linear regression (n=94)

The effectiveness of the brief counselling module

Table II shows the characteristics of the participants in the intervention and control groups. Regarding age, occupation, salary, number of days in hospital, Fagerstrom scores and diagnosis, no significant differences were identified between the groups.

Table II: Characteristics of respondents in intervention and control group (n=94)

	Intervention **(n=48)**		Control **(n=46)**		P Value
	Mean (SD)[c]	n (%)	Mean (SD)[c]	n (%)	
Age	47.9 (15.3)		46.1 (14.5)		0.310[a]
Job					
Not working		14 (66.7)		7 (33.3)	0.849[b]
Working		34 (46.6)		39 (53.4)	
Income					
Low income		38 (57.6)		28 (42.4)	0.817[b]
Moderate and high income		10 (35.7)		18 (64.3)	
Hospital days	5.4 (2.8)		4.8 (2.5)		0.441[a]
Fagerstrom score	3.1 (1.7)		3.4 (1.4)		0.098[a]
Diagnosis					
Smoking related		22 (46.8)		25 (53.2)	0.307[b]

CONTINUE

Table II: Characteristics of respondents in intervention and control group (n=94) (CONT.)

	Intervention (n=48)		Control (n=46)		P Value
	Mean (SD)[c]	n (%)	Mean (SD)[c]	n (%)	
Non-smoking related		26 (55.3)		21 (44.7)	

[a]= Numerical variables using independent T test
[b]= Categorical variables using Pearson chi square test
[c]= Standard deviation

Meanwhile, readiness to stop smoking did not differ between the intervention group receiving the brief counselling module and the control group receiving the usual care, as shown in Table III and Figure 3.

Table III: Effectiveness of Brief counseling module using Pearson chi square test. (n=94)

	Precontemplation (n, %)	Change (n, %)	P Value
Intervention	17(18.1)	31(33.0)	0.065
Control	25(26.6)	21(22.3)	
Total	42(44.7)	52(55.3)	

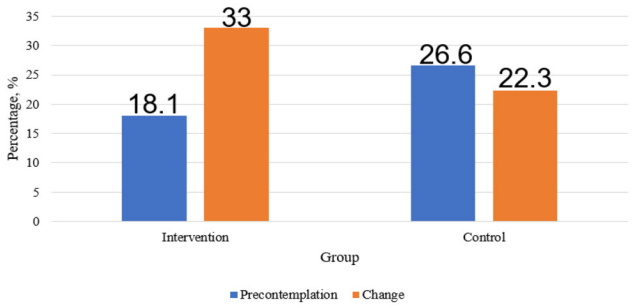

Figure 3: Column chart of Effectiveness of Brief counselling module using Pearson chi square test (n=94)

DISCUSSION

Associated factors for nicotine dependence

Based on the results, sociodemographic factors such as age, occupation, income, duration of hospital stay and diagnosis were not associated with nicotine dependence. None of the variables were significant when analysed using simple and multiple linear regression. These results were most likely due to the small number of sample size studied and especially the patients with a smoking-related illness, who comprised only 50% (14-15).

Patients with a smoking-related illness have a higher quit rate than those hospitalised with conditions unrelated to smoking (16). Good results have been obtained by many quit-smoking interventions for hospitalised patients that target specific groups of illnesses. Several studies have examined the efficacy of intervention among cardiac disease patients, which have shown similarly good results (17-18). Thus, patients hospitalised due to smoking-related illness are likely to be a receptive audience and motivated to give up smoking cigarettes. In the current study, 59% of the respondents had been admitted because of non-smoking-related illness, compared to just 41% admitted due to smoking-related illness.

Meanwhile, other studies show that patients with high nicotine dependence find it difficult to stop smoking, which may lead to them suffering from smoking-related illnesses such as acute coronary syndrome, chronic obstructive pulmonary disease and stroke. As reported by Jimenez et al., smokers who have COPD depend more on nicotine than those who are healthy. This was demonstrated by the mean scores on the Fagerstrum test, which were 4.77 ± 2.45SD and 3.15 ± 2.38SD, respectively, with $p < 0.001$ (19). Moreover, high nicotine dependence also causes patients diagnosed with acute coronary syndrome to continue smoking after hospitalisation (20).

Effectiveness of the brief counselling intervention module

Although the results of delivering this brief counselling module were not significant (p=0.065), 65% of the intervention group patients changed their motivation from pre-contemplation to either contemplation, preparation or action, compared to only 46% of the control group. The simple brief counselling module and pamphlet seem to have the potential to educate and motivate smokers to change their smoking behaviour.

Smoking cigarettes is a learned behaviour, the outcome of which for most individuals is a physical nicotine addiction. This means many smokers find it difficult to stop this behaviour. Current guidelines suggest that a combination of behavioural intervention and nicotine treatment therapy may increase smoking cessation (1, 8). Borges showed that brief intervention counselling and behavioural intervention were effective among pregnant women smokers. These initiatives caused 33.3% tobacco abstinence in the intervention group compared to 8.3% in the group receiving the usual care (P=0.02) (21). For these reasons, future studies should contain brief and extensive counselling (22), behavioural intervention and therapy (23), pharmacotherapy (24-25), nicotine replacement therapy (26-27) and e-cigarette alternative (28) for selected patients in order to obtain improved results.

CONCLUSION

The sociodemographic factors (age, occupation, salary and duration of stay in hospital) were not connected with dependence on nicotine, while the latter was not connected to a diagnosis linked to smoking. To improve our understanding of the factors associated with nicotine dependence, additional variables should be studied. The brief counselling module for hospitalised patients is a promising intervention in terms of improving

smoking cessation behaviour among patients. In this pioneering study, a smoking cessation module for hospitalised patients in Malaysia was developed and created. This involved assessing the effectiveness of the module in the short term. Although the results were statistically unsatisfactory, further studies require a different approach and a longer follow-up because the motivation to change a behaviour is a long and evolving process that needs multiple forms of support from the government, society and the individual's environment.

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